

# Year 3 Science Spring 2 Unit Forces and Magnets

## Progression of Knowledge

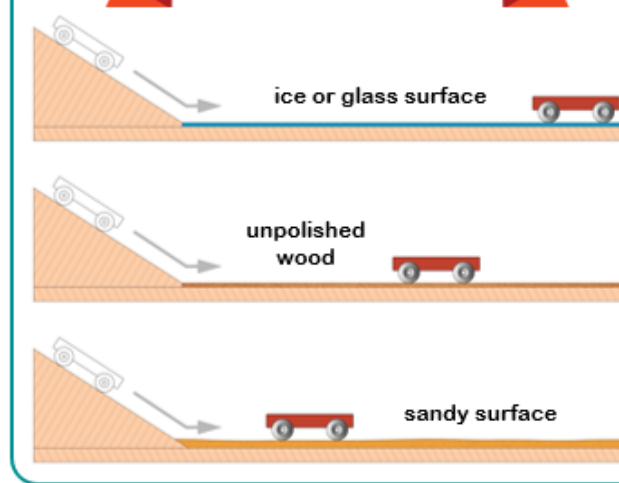
| Unit               | YEAR 3  | YEAR 5  |
|--------------------|---|---|
| Forces and Magnets | <p>Compare how things move on different surfaces. Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p> <p>Describe magnets as having 2 poles. Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p> | <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p> |

| Key Scientific Skills   | Year 3<br>Forces and Magnets |
|---|------------------------------|
| Ask relevant questions and using different types of scientific enquiries to answer them   |                              |
| Set up simple practical enquiries, comparative and fair tests   |                              |
| Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers |                              |
| Gather, record, classify and present data in a variety of ways to help in answering questions   |                              |
| Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables   |                              |
| Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions  |                              |
| Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions   |                              |
| Identify differences, similarities or changes related to simple scientific ideas and processes  |                              |
| Use straightforward scientific evidence to answer questions or to support their findings  |                              |

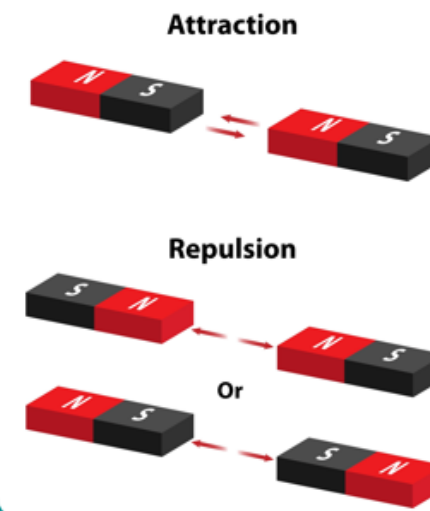
### Lesson Sequence

1. Explore contact and non-contact forces
2. Compare how things move on different surfaces
3. Explore different types of magnets
4. Explore the properties of magnets and everyday objects that are magnetic
5. Understand that magnetic forces can act at a distance
6. Explore the everyday uses of magnets

### Friction



### Magnetic Forces



### Forces

- Forces act in opposite directions to each other.
- When an object moves across a surface, **friction** acts as an opposite force. Friction is a force that holds back the **motion** of an object.
- Some surfaces create more friction than others, meaning that objects move across them more slowly.
- On a ramp, the force that causes the object to move downwards is gravity.
- Objects move differently depending on the **surface** of the object itself and the surface of the **ramp**.

### Rocket Words

|                   |  |
|-------------------|--|
| force             | a power or strength that can cause an object to move                                     |
| friction          | the force that pulls backwards when objects rub against each other                       |
| motion            | the process of movement  |
| texture           | the feel or look of a surface  |
| magnet            | an object that can pull some metal items towards it                                      |
| attract           | to pull towards  |
| repel             | to force back or push away   |
| magnetic field    | the force that surrounds a magnet and attracts magnetic objects                          |
| non-contact force | a force that occurs without objects touching each other                                  |
| magnetism         | the force of a magnet  |
| compass           | an instrument which shows direction  |
| orienting         | a sport where you have to find your way across a route with the aid of a map and compass |

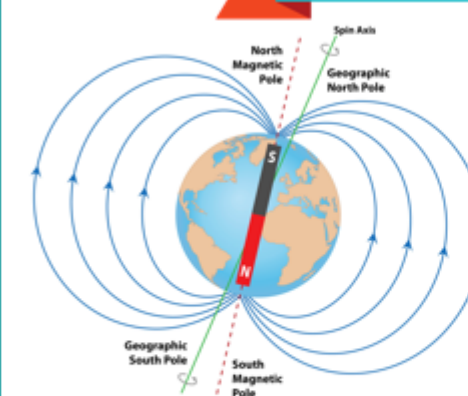
#### non-magnetic



#### magnetic



### How do magnetic poles work?



The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole. Opposite poles attract; similar poles repel. If you place two magnets so the south pole of one faces the north pole of the other, the magnets will move towards each other. This is called attraction. If you place the magnets so that two of the same poles face each other, the magnets will move away from each other. They are repelling each other.